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Chinese porcelains and the decorations of Omani mihrabs

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Summary
This paper explores the history of the Chinese porcelain trade in Oman with the aim of gauging the impact of these wares on Oman's religious architecture. The large quantities of porcelain surface finds from the interior and the comparatively unusual reliance on them for the decoration of prayer niches, in the presence of equally valuable wares from Persia and elsewhere, suggest an elevated status for these objects, which is not necessarily a product of their immediate monetary value. Chemical and stylistic analyses were carried out to determine the dates and provenance of the ceramics studied, with the aim of gaining a better understanding of their introduction into the Omani market and their relation to religious design schemes.

Keywords: Omani decorated mihrab, Chinese porcelain in Oman, Manah, Sinaw, Ibadism in Oman

Introduction

China has been a producer of high-fired and glazed ceramics for the best part of 3000 years and their export towards the lands of central and western Asia begins to take on a formal character during the Han dynasty (including the first century AD). Porcelains, fired at even higher temperatures and produced from very fine clays known as kaolinites, begin to be produced from around AD 600 onwards, and by the first half of the seventh century one begins to find such objects being exported to the Arab and Middle Eastern spheres. Rose Kerr has indicated that the volumes of Chinese goods including porcelains, silks, lacquerwares, and gold, towards central Asia grows throughout the Tang dynasty (AD 618–960) and peaks during the Yuan dynasty (AD 960–1368) (Kerr 2005: 125). A substantial part of this trade, if not the majority, was conducted overland via the famed Silk Road, which crossed the plains of central Asia and connected directly to the Abbasid centres at Baghdad and Damascus. After the Mongolian conquest of much of northern China in AD 1127 a shift towards maritime trade in southern China begins to be discernible, reaching its height under the repressive policies of Kublai Khan in the thirteenth century (Sen 2006). It was around the mid- to late twelfth century, therefore, that Chinese goods began to be traded in greater quantities along the seafaring trade routes of the Indian Ocean.

It has been argued that the Chinese market was itself so large and strong that there was no immediate need for any form of reliance on foreign trade (Kerr 2005: 125). Other authors, however, have noted an almost extreme hunger for silver that begins to dominate the Chinese economy from the late Yuan period and well into the Ming dynasty. The prime source of this silver bullion was initially the Portuguese traders, and from AD 1571 onwards also the Manila galleons of Spain, which contributed markedly to the export of Chinese wares towards Europe and the Middle East.[1] It is a well-known fact that the Chinese themselves mounted a series of large-scale expeditions into the Indian Ocean[2] but the goals of these forays were never aimed at territorial conquest but rather at promoting Chinese products and fostering exchange, both diplomatic and economic. This internationalist and outward-looking phase under the Yongle Emperor during the first half of the fifteenth century was abruptly cut short by his successor; the Portuguese soon occupied the resulting Indian Ocean power vacuum in a significantly more forceful manner. As we shall see, however, Zheng He's promotion of Chinese luxury products may nevertheless have been successful in that porcelains, even when of

[1] William Atwell, relying partly on estimates by Ch'üan Han-Sheng, has indicated that Chinese mines may never have produced as much silver as a single Spanish galleon could, and did, carry across the Pacific from Acapulco to Manila during the sixteenth and seventeenth centuries. He goes on to state that when in AD 1636 four Portuguese galliots carried 75 tons of silver from Nagasaki to Macao, Chinese silver production had become entirely negligible (Atwell 1982: 77–78).

[2] Most notably, perhaps, under the famed eunuch admiral, Zheng He, who in AD 1421 explored the main trading posts in this sea all the way to the East African coast (Yamashita 2006; Wade 2005).

comparatively low quality, clearly retained a high degree of prestige for some centuries to come.

The Portuguese irruption into the Indian Ocean has traditionally received a lot of attention in Western academic circles and is often portrayed as something of a game changer, at times being credited with practically 'inventing' long-distance trade in this part of the world. The precise nature and impact of Portuguese trade has been a subject of some debate in recent years as new data is suggesting that the reputedly disruptive and violent incursion of the Portuguese vessels into the Indian Ocean never in fact occurred in such a manner.[3] While there is no question about the destruction of Qalhāt and the conquests of Ṣuḥār and Muscat (Masqaṭ) at the hands of the Iberians, the flow and nature of the traded products appears to have been less affected by these actions than traditionally assumed.

The Portuguese expanded upon their existing mercantile tradition that had, in the past, encompassed parts of the western Mediterranean, an economic sphere they never fully abandoned and which continued to be supplied with the goods that their fleets brought from the Far and Middle East. The types of goods traded remained largely the same, consisting since the Middle Ages of the staples, such as spices, silks, lacquer wares, and indeed also porcelains.[4]

Chinese porcelains in Oman

Limited amounts of Chinese porcelain had been finding their way into the Arabian Peninsula since the first century BC, but it is not until the Tang-Abbasid connection of the ninth and tenth centuries that trade between both spheres began to occur in a truly considerable volume. The Hormuzi markets had been receiving significant amounts of Chinese celadon since the thirteenth century or perhaps earlier (Morgan 1991).[5] Following a hiatus, by the mid-fifteenth century Chinese wares were a firm staple on Arabian markets, usually reaching the western Indian Ocean in relays from Vietnam, Malaka, and western India.

Connecting to the ports of the eastern Arabian Peninsula must therefore have been an important strategic aim for the expanding Portuguese maritime empire. Oman's mercantilist past is one of the main themes of the country's history in which the Portuguese presence forms but a phase. Through the ages the southern and eastern Arabian Peninsula has been an integral part of the networks of exchange that have guided the fortunes of the western Indian Ocean, and as such they are inextricably linked to the larger Asian economic sphere, relying greatly on imports in wood from India, slaves from Africa, and ceramics and silks from China, among many other products from the Indian Ocean sphere. But it is the Chinese dimension of Oman's overseas trade network to which the current paper is in part dedicated, hoping to shed some light on the usage and perception of Chinese porcelain wares within the ritual architecture of the Omani interior (al-Dākhiliyyah and al-Sharqiyyah), but also the wider society, in general.[6]

Other authors have already pointed out the surprising amounts of Chinese porcelain that can be found at times strewn across the landscape of the Omani settlement quarters (*ḥārāt*, sing. *ḥārah*). A small number of studies — mainly on coastal sites — have been carried out to determine their dates and provenance (e.g. on Ṣuḥār: Kervran & Bernard 1996). These may therefore be categorized as points of transit and exchange, whereas the locations examined in this paper are effectively the termini — the eventual destination — of the artefacts under consideration. This is of relevance in so far as the transit points act as points of collection and distribution and may in this light provide a diffuse image of what was actually intended for local trade. Although in no way final

[3] Al-Salimi and Staples have recently presented highly compelling evidence suggesting that rather than violently monopolizing all maritime transport in the Indian Ocean region, the Portuguese involvement consisted in co-opting the already existing routes and infrastructure under its own flag. Thus a ship built in Indonesia crewed by Hormuzis under an Italian captain carrying rice from India to Ṣuḥār might sail under a Portuguese flag and therefore count as a Portuguese vessel (al-Salimi & Staples, this volume).

[4] The word 'porcelain' comes from the Provençal *porcellanas*, which were in fact cowrie shells, named thus because of their resemblance to a pig's ear. Their colour and texture eventually resulted in their name being conferred upon Chinese ceramics some time after the thirteenth century, but it continued to refer also to cowries well into the eighteenth century. Cowrie shells from the Maldives and other Indian Ocean locations were carried by Piancenzan and Venetian traders who transported them from Alexandria westwards for dispatch to the markets of Africa, from where they returned to the markets of the Indian Ocean as forms of exchange (Abulafia 1994: 117). It could be argued, therefore, that a degree of confusion may exist in the distinction of early Portuguese consignments of 'porcelains', which may at times have been misinterpreted as Chinese wares.

[5] It stands to reason that these objects may in isolated cases have permeated into the Omani hinterland, although it is unlikely that they will have had the impact of the later blue and white wares, which then became ubiquitous.

[6] The inclusion of Chinese wares into architectural decorations is not exclusive to mosques. Isolated cases of private dwellings and fortifications — such as some merchant houses in Ibrā[3] and the Ṣuḥār fort — also had Chinese porcelains encrusted into arches and vaults. In those cases it is much easier to discern a relatively straightforward decorative intent; in a religious context, however, decorative schemes were much more closely related to a theological subtext.

or conclusive, this paper hopes to provide the starting point for a more detailed study of Chinese porcelain in the Omani interior and, in so doing, evaluate Omani attitudes not just to the trade but also towards the consumption of foreign goods.

For the purposes of this paper we examined finds from Izkī (Ḥārat al-Yaman), Manaḥ (Ḥārat al-Bilād), and Sināw (Ḥārat Āl Bū Rashīd and Ḥārat al-Ṣawāwifah). Reliance on Manaḥ and Sināw was considered desirable due to the convergence of both copious surface finds of Chinese ceramics and the existence of mihrabs (prayer niches; *maḥārib*, sing. *miḥrāb*) with ceramic decorations. A correlation between the two was expected to provide comparative data on the usage patterns of these objects. Izkī proper (al-Yaman and al-Nizār), while not having any mosques with ceramic inclusions (although Muqazzaḥ village, away from the core of the oasis, does have one), acted in the past as an important point of transit into the interior and between the Sharqiyyah and Dākhiliyyah regions, and finds from this location may be considered to be representative of a broader spectrum of the objects that found their way into the interior termini.

Chemical analysis of surface finds

Methodology

Thirty samples collected from three Omani sites Izkī, Manaḥ, and Sināw were chemically analysed (ten samples from each site, labelled Izkī-1–10, Manaḥ-1–10, and Si-1–10).

A small piece of each sample was first mounted in a resin block and the sample blocks were then polished and coated with a thin (*c.*20 nm) layer of vacuum-evaporated carbon. The prepared samples were subsequently examined in the FEI XL30 scanning electron microscope using a beam voltage of 20kV.[7] The samples were imaged primarily using a backscatter detector with image contrasts showing differences in composition within a given field of view.

Quantitative microanalysis was performed with an Oxford Instruments INCA microanalysis system and INCA X-Max80 detector for the ceramic body and glaze of the samples. The blue areas of several representative samples were also analysed for qualitative investigation. Quantification of the results using the INCA system involved standards (certified reference materials) so as to improve the accuracy of major element concentrations. A quality-control check using a glass standard (Corning B) of known composition was performed prior to analysis of the samples and this confirmed the accuracies of the major elements to be +/- 1% relative. Spectra from homogeneous areas of each sample were processed using the stoichiometry processing option assuming a single valency for elements such as Fe and Mn are expressed as oxide weight per cent.

[7] Located at the Materials Department, University of Nottingham, United Kingdom.

Results

The bulk chemical compositions of ceramic bodies, glazes, and blue areas of tested blue and white samples are listed in Figures 1, 2, and 3. According to the bulk chemical composition, the blue and white samples separate into three 'technology groups': Group 1 — the ceramics were made with an ordinary clay-based body, a calcium fluxed glaze, and the blue pattern was drawn with a high manganese cobalt pigment; Group 2 — the ceramics were made with a high silica body, a high sodium alkaline glaze, and the blue pattern was drawn with a high iron content cobalt pigment; and Group 3 — the ceramics were made with an ordinary clay-based body and a lead-alkaline glaze. Five samples belong to Group 2 (Izkī-1, Izkī-2, Izkī-10, Manaḥ-6, and Manaḥ-8), three to Group 3 (Izkī-3, Izkī-6, and Izkī-7), and the rest to Group 1. Studies of the chemical compositions of the three groups reveal that the different technologies or recipes used for making these ceramics can be used to suggest their origins (Fig. 4).

Discussion

The origin of the Group 1 blue and white ceramic samples

The majority of our tested samples belong to Group 1. These samples have an ordinary clay-based body and a glaze mainly fluxed with calcium oxide, and the blue pattern was drawn with a high-manganese cobalt pigment. These chemical features clearly point to a Chinese origin for the samples.

The ceramic bodies of Chinese blue and white wares were generally made from porcelain stone, a type of igneous rock with a balanced silica to alumina ratio and a decent proportion of fluxing oxides that allow the ceramic body to become mature after being fired at over 1200°C. Sometimes a portion of high alumina clay was added to the porcelain stone to make the body even

		Na_2O	MgO	Al_2O_3	SiO_2	K2O	CaO	TiO_2	MnO	Fe_2O_3	ZnO	Total
Group 1	SI 1	0.19	0.25	22.11	72.67	2.41	0.58	0.08	0.00	1.58	0.15	100.02
	SI 2	0.12	0.10	22.45	72.59	2.44	0.66	0.28	0.00	1.43	0.02	100.08
	SI 3	0.07	0.43	16.46	77.41	3.22	1.04	0.13	0.00	1.05	0.22	100.04
	SI 4	0.18	0.15	18.91	73.77	4.52	0.61	0.15	0.07	1.94	0.00	100.31
	SI 5	0.09	0.25	19.01	72.40	5.50	0.87	0.01	0.27	1.69	0.00	100.10
	SI 6	0.20	0.06	18.73	74.04	4.44	0.59	0.05	0.23	1.67	0.00	100.01
	SI 7	0.13	0.16	18.47	74.10	4.37	0.86	0.01	0.16	1.73	0.00	99.99
	SI 8	0.38	0.28	18.60	72.40	5.72	0.85	0.10	0.26	1.41	0.00	100.00
	SI 9	0.02	0.17	18.44	73.98	4.38	0.61	0.12	0.26	2.00	0.00	99.98
	SI 10	0.08	0.12	20.11	74.91	3.38	0.19	0.09	0.00	1.09	0.04	100.01
	Manah 1	2.16	0.09	23.23	68.30	3.60	1.47	0.14	0.00	0.86	0.19	100.01
	Manah 2	1.18	0.28	17.28	76.33	3.51	0.37	0.21	0.03	0.76	0.09	100.01
	Manah 3	0.99	0.05	21.10	72.32	3.63	0.57	0.17	0.08	1.15	0.00	100.04
	Manah 4	0.27	0.56	19.72	72.98	2.32	2.91	0.19	0.03	1.36	0.00	100.32
	Manah 5	1.64	0.08	20.26	72.68	3.27	0.74	0.07	0.35	0.97	0.00	100.04
	Manah 7	0.10	0.56	19.41	73.30	2.04	3.09	0.06	0.09	1.24	0.11	100.00
	Manah 9	2.05	0.12	19.71	72.58	3.65	0.51	0.08	0.08	1.11	0.11	100.00
	Manah 10	1.06	0.14	20.83	72.31	3.38	0.43	0.11	0.02	1.68	0.05	100.01
	IZKI 4	1.37	0.01	17.46	76.17	3.70	0.68	0.00	0.04	0.86	0.00	100.27
	IZKI 5	0.18	0.12	23.02	69.05	4.54	1.55	0.12	0.21	1.15	0.08	100.01
	IZKI 8	1.44	0.12	17.56	75.41	3.58	0.63	0.09	0.04	1.14	0.00	100.01
	IZKI 9	0.12	0.53	18.72	74.39	1.88	3.16	0.05	0.11	1.04	0.00	100.00
Group 2	IZKI 1	2.00	0.65	2.47	92.26	0.94	0.89	0.27	0.03	0.38	0.10	100.00
	IZKI 2	2.52	0.65	3.10	90.86	1.07	1.09	0.08	0.00	0.50	0.16	100.03
	IZKI 10	2.33	0.66	3.81	89.86	1.22	1.35	0.19	0.02	0.54	0.00	99.98
	Manah 6	2.70	0.48	3.86	89.73	1.45	1.32	0.06	0.17	0.47	0.00	100.24
	Manah 8	2.03	0.54	3.39	91.33	1.38	0.94	0.1	0.06	0.38	0.00	100.15
Group 3	IZKI 3	0.60	0.16	19.21	76.01	2.17	0.68	0.37	0.01	0.60	0.22	100.03
	IZKI 6	0.93	0.20	19.78	74.74	2.10	1.19	0.29	0.12	0.64	0.00	99.99
	IZKI 7	0.59	0.19	19.33	76.71	2.00	0.51	0.27	0.00	0.42	0.00	100.02

Figure 1. *The chemical composition of the ceramic body of the tested samples.*

more refractory, but this is only the case for high-quality products from some manufacturers. Generally, a recipe such as this produces ceramic bodies containing 65–75 wt% silica, alumina contents of 15–25 wt%, and a balance of oxides of *c*.10 wt%.

A high-calcium glaze is an important feature for ancient Chinese ceramics. Nearly all high-fired Chinese ceramics were exclusively fluxed with high-calcium raw materials. The most common choices for the latter were limestone and a high-calcium plant ash. One of the two, or a combination of the two, were mixed with slightly-weathered porcelain stone to produce glaze. Glaze made out of such a recipe is transparent and is able to reveal perfectly the blue pattern drawn on the ceramic body. The typical chemical composition of such a glaze is a silica content of 60–75 wt%, an alumina content of 10–20 wt%, a calcium oxide content of 5–15 wt%; the balance of oxides being *c*.5 wt%.

The blue patterns of blue and white ceramics are drawn with a cobalt rich pigment. The cobalt ions in the pigment produce a blue colour after the ceramic is fired in the kiln, but it is the other two major elements in the pigment — iron and manganese — which can give the approximate provenance for the pigment used. Used Chinese local cobalt-rich pigments have a high manganese concentration — a type commonly used for Chinese blue and white ceramics after the early Ming dynasty — and effectively, all of Chinese export blue and white was produced using this pigment. The other kind of cobalt- rich pigment used on ancient Chinese blue and white was

		Na_2O	MgO	Al_2O_3	SiO_2	K_2O	CaO	TiO_2	MnO	Fe_2O_3	ZnO	PbO	Total
Group 1	SI 1	0.10	0.51	14.84	68.66	3.65	11.23	0.13	0.04	0.73	0.11	N/A	100.00
	SI 2	0.13	0.43	13.83	69.23	3.05	12.13	0.17	0.06	0.83	0.14	N/A	100.00
	SI 3	0.06	0.39	12.73	72.17	2.85	10.67	0.17	0.03	0.67	0.26	N/A	100.00
	SI 4	0.11	0.59	15.41	65.81	3.70	13.41	0.18	0.00	0.80	0.00	N/A	100.01
	SI 5	0.15	0.73	14.60	63.56	2.84	15.96	0.23	0.27	0.92	0.70	N/A	99.96
	SI 6	0.19	0.87	14.87	64.93	2.85	15.47	0.15	0.03	0.65	0.00	N/A	100.01
	SI 7	0.14	0.84	15.50	65.27	3.07	14.04	0.11	0.14	0.88	0.00	N/A	99.99
	SI 8	0.20	0.76	14.32	67.23	3.43	12.71	0.21	0.13	0.75	0.26	N/A	100.00
	SI 9	0.00	1.02	14.96	65.11	2.79	15.14	0.00	0.05	0.94	0.00	N/A	100.01
	SI 10	0.15	0.06	16.05	74.30	4.88	3.63	0.13	0.07	0.79	0.00	N/A	100.06
	Manah 1	2.11	0.21	14.53	69.70	2.64	9.66	0.03	0.13	1.08	0.00	N/A	100.09
	Manah 2	1.87	0.38	14.55	67.57	3.49	10.57	0.21	0.11	1.23	0.02	N/A	100.00
	Manah 3	1.39	0.46	13.60	68.99	3.16	11.45	0.04	0.09	0.93	0.00	N/A	100.11
	Manah 4	0.00	1.70	14.47	67.13	1.83	12.48	0.17	0.00	2.10	0.32	N/A	100.20
	Manah 5	1.73	0.30	13.58	70.40	2.89	9.84	0.13	0.09	1.02	0.01	N/A	99.99
	Manah 7	0.14	0.96	14.75	67.82	2.11	13.17	0.12	0.10	0.69	0.14	N/A	100.00
	Manah 9	1.96	0.35	13.53	71.06	3.01	9.16	0.09	0.13	0.73	0.00	N/A	100.02
	Manah 10	1.38	0.30	13.66	71.32	3.68	8.11	0.06	0.04	1.49	0.00	N/A	100.04
	IZKI 4	1.64	0.17	13.51	68.31	2.99	11.86	0.14	0.02	1.20	0.17	N/A	100.01
	IZKI 5	0.25	0.16	14.03	68.13	4.20	11.60	0.17	1.05	0.47	0.00	N/A	100.06
	IZKI 8	1.54	0.28	13.94	68.55	2.97	11.70	0.00	0.18	0.92	0.00	N/A	100.08
	IZKI 9	0.05	1.29	13.83	68.78	2.26	13.12	0.05	0.09	0.53	0.00	N/A	100.00
Group 2	IZKI 1	14.21	2.12	2.07	72.60	2.80	5.52	0.27	0.15	0.67	0.00	N/A	100.41
	IZKI 2	14.20	2.10	2.90	71.76	2.56	5.03	0.47	0.00	0.64	0.50	N/A	100.16
	IZKI 10	14.54	2.46	2.93	71.52	2.31	5.19	0.37	0.12	0.56	0.00	N/A	100.00
	Manah 6	14.77	2.83	2.23	70.66	2.80	5.83	0.20	0.19	0.49	0.00	N/A	100.00
	Manah 8	14.38	2.72	1.86	72.31	2.96	4.81	0.29	0.08	0.54	0.00	N/A	99.95
Group 3	IZKI 3	2.66	0.13	12.89	60.50	4.07	3.97	0.15	0.19	0.27	0.00	15.39	100.20
	IZKI 6	1.79	0.17	11.59	61.29	3.14	7.26	0.00	0.03	0.34	0.23	14.16	100.00
	IZKI 7	2.46	0.20	12.42	62.02	4.44	3.76	0.22	0.00	0.37	0.22	13.89	100.00

Figure 2. *The chemical composition of the glaze of the tested samples.*

		Na_2O	MgO	Al_2O_3	SiO_2	K2O	CaO	TiO_2	MnO	Fe_2O_3	CoO	Total
Group 1	IZKI 9	0.11	1.08	13.55	68.08	2.48	10.62	0.11	2.55	1.21	0.21	100.00
	SI 6	0.07	1.08	14.69	63.6	2.55	16.04	0.09	0.91	0.85	0.12	100.00
	SI 10	0.12	0.16	16.62	71.81	4.53	3.36	0.14	1.99	0.79	0.31	99.83
	Manah 7	0.04	1.1	14.29	67.36	2.25	12.3	0.06	1.63	0.93	0.09	100.05
Group 2	IZKI 10	11.38	2.59	2.77	73.35	2.77	5.81	0.49	0.09	0.68	0.08	100.01
	Manah 6	12.42	2.41	2.47	73.37	2.81	4.36	0.36	0	1.6	0.24	100.04

Figure 3. *The chemical composition of the blue area of representative samples.*

a high-iron type, which was only used on Chinese blue and white produced in the early phase of its development and in some provincial wares produced in Yunnan province. It is now generally accepted that this high-iron content cobalt pigment was an overseas import, possibly from Iran or Sumatra.

The samples of Group 1 fit all the three chemical features of Chinese export blue and white, making it fairly certain that these samples were produced in China. Such ceramics were once important merchandise on the maritime Silk Road, from the middle Ming dynasty (*c*. AD 1550) until the early Qing dynasty (*c*. AD 1650). A large proportion of

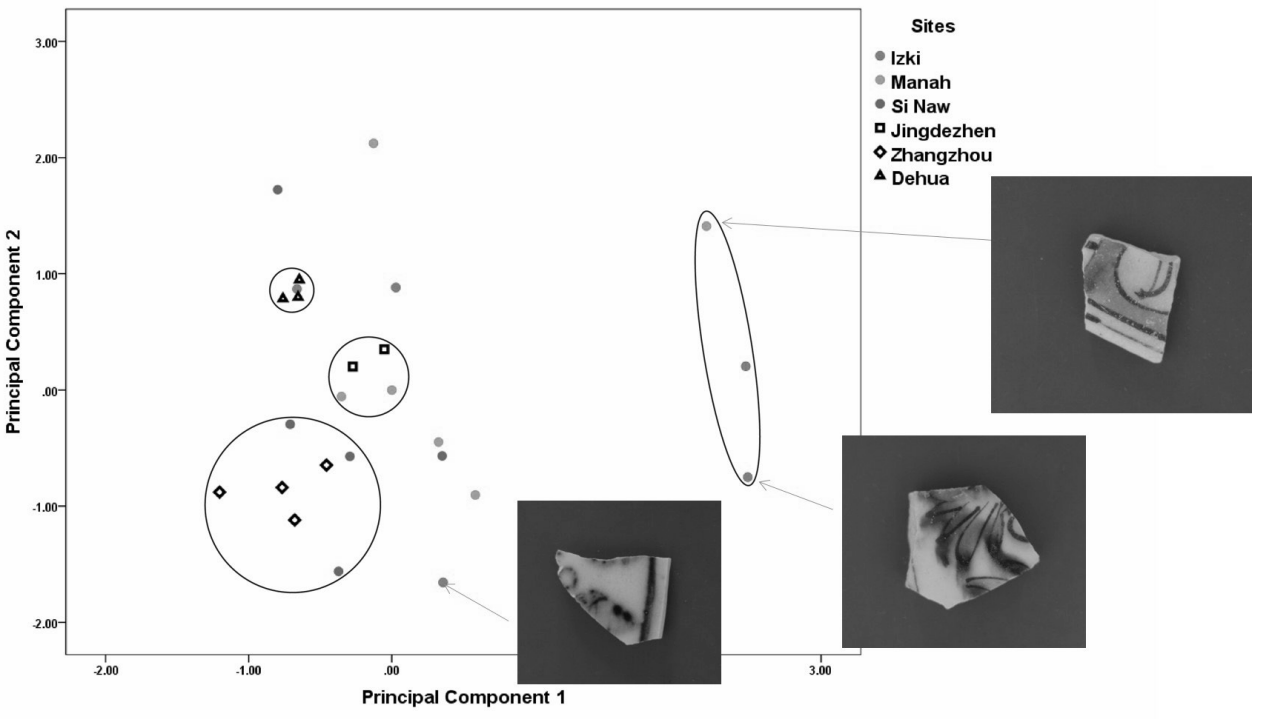

Figure 4. *The Omani porcelain sherds: distribution according to the production sites.*

Chinese blue and white was made specifically for export, possessing a distinctive style and shape, and was not used domestically. Two major manufacturing areas were responsible for the large demand of export blue and white at that time: Jingdezhen and the coastal area of south-eastern China. Jingdezhen was a ceramic manufacturing town for over a millennium; according to historical sources, over 1000 workshops and kilns were active simultaneously during the late Ming dynasty and the artisans possessed the best skills of blue and white production at the time. Generally speaking, the high-quality Chinese exports were largely produced in Jingdezhen, but it was also responsible for the manufacture of a share of mid- to low-quality export wares. Hundreds of kilns specifically producing export wares were located in the mountainous areas along the south-eastern Chinese coastline during the late Ming up to the early Qing period. The production skills used, although transferred from Jingdezhen, were not comparable. Taking advantage of the nearby coastal ports and high-quality local ceramic raw materials in the mountains, they mainly produced mid- to low-quality export wares for the overseas markets. Only a few elite kiln sites in the area — such as Zhangzhou — had a share of high-quality production.

Although the basic blue and white techniques of the two major manufacturing areas were quite similar, the chemistry and mineralogy of the local raw materials used were slightly different: the porcelain stone of Jingdezhen has a higher proportion of sodium feldspar in its mineral composition reflected by a higher sodium content in their chemical compositions. As shown in Figure 4, Group 1 samples clearly separate into two sub-groups according to their sodium content, indicating the distinctive manufacturing origins of these samples.

The origin of Group 2 blue and white ceramic samples

The very high silica body content of around 90 wt% in Group 2 samples is an important technological signature of Islamic stone-paste technique. This technique alone — used to make all types of Islamic ceramics from the tenth century onwards — is sufficient to identify that the Group 2 samples were produced in the Islamic world. Important stone paste Islamic ceramic types include lustrewares, decorated with a metallic overglaze pigment, and the underglaze painted pottery which became dominant after 1000, including the blue and white ceramic influenced

by Chinese porcelain and the polychrome Iznik wares associated with Ottoman Turkey from the late fifteenth century. According to previous studies, the recipe of stone paste bodies is described as comprising about ten parts quartz, one part frit-glass, and one part of a fine white clay. Quartz is simply crystallized silica, and frit glaze and clay both have a high silica content, which explains why the stone-paste body also has a high silica content. The clay keeps the material together during forming, and reacts with the frit during firing to cement together the quartz grains. The SEM backscattered image of sample, Manaḥ-6 of Group 2 shows the same microstructure as the one for an Islamic stone-paste sample in Tite (1989).

The glaze of Group 2 samples is a type of alkaline glaze, though it does not contain detectable levels of lead and tin, both common components of Islamic tin-opacified lead-alkaline glaze. The chemical composition of this type of glaze has not been reported in the key literature. If one were to ignore the lead and tin contents of the typical Islamic glaze, however, the chemical compositions of the remaining elements and their proportion are not dissimilar to that of the glaze of Group 2 samples. The glazes have alumina contents of under 5 wt%, and a notably high sodium content (*c.*10 wt%), a CaO content of over 5 wt%, and both MgO and K_2O contents of over 2 wt%. This indicates that a halophytic plant ash alkali source was used — also found in contemporary glasses. To add tin in the glaze is to create opacification, which is against the primary principle of glaze making for underglaze painted blue and white ceramics, where the glaze needs to be transparent to reveal the pattern drawn on the ceramic body. Thus this glaze was probably a non-tin and lead variation created from common Islamic glaze-and glass-making raw materials (Henderson 2013: 259).

A significantly higher iron content is found in the blue area of the glaze than in the glaze area in samples, Izkī-10 and Manaḥ-8 of Group 2, indicating that the blue patterns of the samples in this group were drawn with a high-iron content cobalt pigment. It has been found by previous studies that cobalt pigments with a high-iron content were commonly used for Islamic ceramic and glass production. The presence of several other signature elements, such as nickel, arsenic, zinc, and copper associated with cobalt-rich minerals varies according to specific mineral sources (Henderson 2013: 69–75). Thus, it suggests that the high-iron cobalt-rich pigments derived from different workshops could have originated from different sources. None of the signature elements were detected in significant amounts in our qualitative analysis of the blue area of the representative samples in this group. So this could suggest that the origin of the cobalt pigment used in Group 2 samples was different from the origins of the cobalt pigments that had been studied.

Chemical composition of Group 3 blue and white samples

Group 3 only contains three samples. They have a balanced clay-based ceramic body and a lead-alkaline glaze with no detectable tin addition. Due to the small sample size, and with no reliable literature on such a combination of ceramic-making techniques, the origin of these samples cannot be suggested here. No blue and white ceramic with a lead-alkaline glaze made in East Asia has been reported. Since the ceramic samples were found in Oman, and they have a lead-alkaline glaze, it is plausible to argue that these samples were products of the Islamic world, but it is not possible to give a date for the samples in this context.

Chinese porcelains in the mihrabs of the Omani interior

The most unusual reappropriation of Chinese porcelain wares in Oman is their integration into the prayer niches of mosques. While the practice of decorating mihrabs with ceramic dishes is not exclusive to Oman, the rapid spread of this artistic expression across the Omani interior in the sixteenth century is significant. On occasions the entire mihrab was heavily stuccoed in a style reminiscent of Buyid/Seljuq antecedents and more commonly datable to the thirteenth century — such as the only extant Omani example at Saᶜāl in Nizwā, dating to AD 1252 (Fig. 5).[8] This highly elaborate design scheme re-emerged into prominence during the sixteenth century (although it may never have truly left), and continued into the early-nineteenth century in some areas. This decorative revival is accompanied, and indeed in some cases borne by, the increasing insertion of Chinese porcelain bowls and dishes into the stuccoed frame.

The early sixteenth century revival of this decorative tradition — beginning with Masjid al-ᶜAlī in Manaḥ in AD 1503–1504 (Fig. 6) — coincides also with the expanding control of the Arabian coast by the Portuguese.[9] The

[8] For a discussion on the possible Buyid period influence on Oman's religious architecture, see Bandyopadhyay 2008.

[9] Afonso de Albuquerque sacked Qalhāt and took control of Muscat in AD 1508, continuing the expansion of Portuguese territorial and mercantile interests throughout the region.

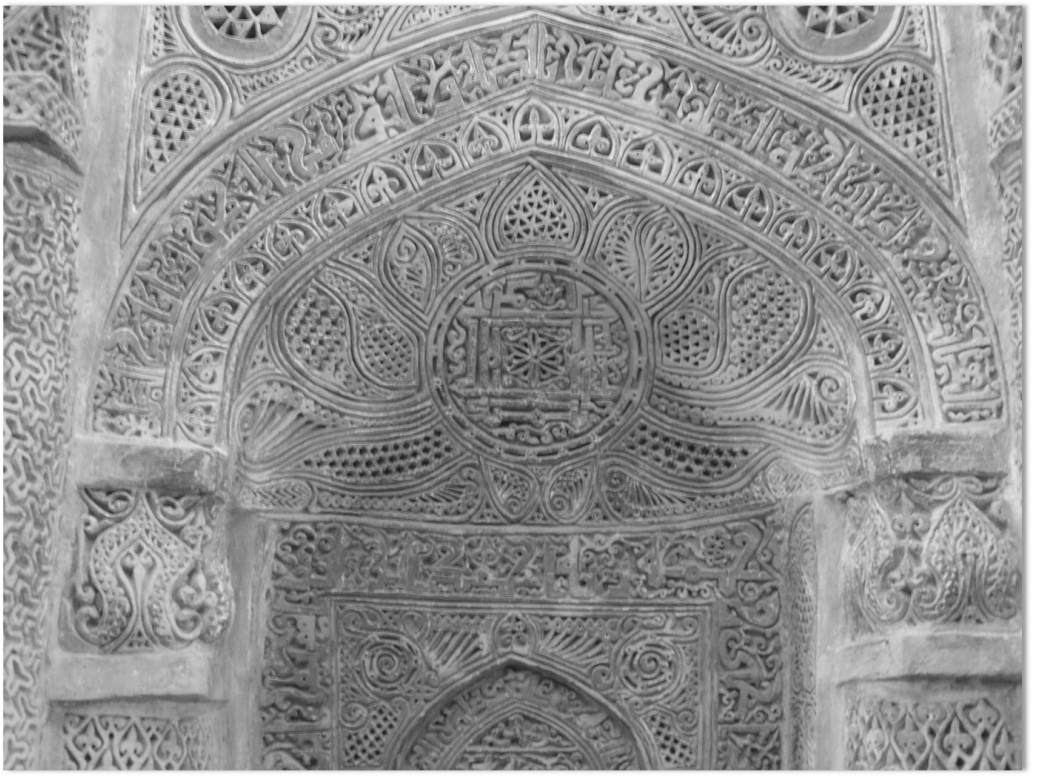

Figure 5. *The mihrab at Masjid al-Jāmiᶜ in Saᶜāl, Nizwā: detail of niche.*

Iberians nominally dominated the long-distance trade within the Indian Ocean and beyond, raising a question about the extent to which this newly arrived presence was responsible for the apparent influx of Chinese porcelain into the Omani sphere. The Ming administration tried hard to curb the use of domestic bullion for foreign trade, insisting instead that silks, porcelains, and lacquerwares be used by Chinese traders when engaging in commerce with foreign merchants (Atwell 1982). This is reflected by the quantity of Chinese porcelain found at coastal sites such as Ṣuḥār (Pirazzoli-t'Serstevens 1985).

The assemblage collected over the course of our fieldwork in Oman, although small and in no way exhaustive, is representative of the territory's mercantile horizon and provides a useful temporal context for studying the mihrab porcelain insertions. A significant proportion of surface finds from both Manaḥ and Sināw show remarkable consistency. Chemical analysis indicates that those from Manaḥ are often Ming dynasty wares from Zhangzhou and Jingdezhen blue and white (*c*. AD 1550–1650), while those found in Sināw are Zhangzhou blue and white of the same period. One find from Izkī is clearly identifiable as Qing dynasty Dehua blue and white from the mid-seventeenth to the mid-eighteenth century (*c*. AD 1650–1750). Other sherds examined from Izkī — and also Manaḥ and Sināw — are Chinese but of indeterminate origin. These coincide with a spike in Chinese exports during that period and also a marked change in the Omani cultural horizon.

Part of the question, then, is how these objects arrived in Oman. Were they the exploits of Omani traders active on the Indian and south-east Asian coasts, trading in high-value goods such as horses, pearls, and incense? Or were they brought in by the Portuguese to trade with Oman's interior for local goods, using porcelain instead of the silver they required for the Chinese markets as a form of currency, similar to the cowrie shells in the trans-saharan trade? With this in mind, three entrepôts demand attention: Ṣuḥār, Muscat, and the Sharqiyyah region ports — Qalhāt until the fifteenth century[10] and subsequently, Qurayyāt and Ṣūr. Chinese

[10] Although the port of Qalhāt was partially destroyed by the Portuguese in AD 1508, there are indications that vessels continued landing there (al-Salimi & Staples, this volume), albeit perhaps in significantly reduced numbers.

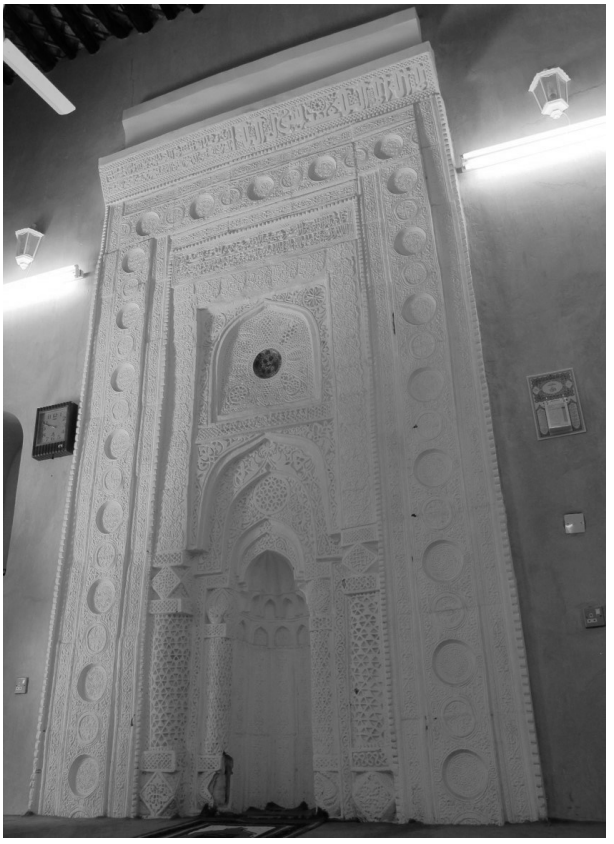

Figure 6. *The mihrab at Masjid al-ᶜAlī, Ḥārat al-Bilād, Manaḥ.*

porcelain trade in the Indian Ocean region gradually picks up in the latter half of the fifteenth century, which also coincides with the many attempts to revive the Ibadi imamate, which met with varying degrees of success (Wilkinson 1987). The demise of Ṣuḥār in the early thirteenth century is well attested, followed by a partial revival from the seventeenth century onwards. Thus, while a revived Ṣuḥār may correlate well with the later Chinese porcelain found in the Omani interior, it looks unlikely that the early material will have arrived through it. It makes Muscat and the Sharqiyyah ports of Ṣūr, Qalhāt, and Qurayyāt the most likely points of entry for these pieces. It is plausible therefore, as evidence discussed below suggest, that from the end of the fifteenth century a small amount of Chinese porcelain will have penetrated into interior Oman through the Sharqiyyah ports.

The Portuguese may well have played a role in the relatively sharp increase in mid-sixteenth-century Chinese porcelain importation into Oman, possibly through Muscat, using it to barter for goods. Prior to their pillaging of Qalhāt in AD 1508, however, the town's Hurmuzi rulers and their Omani trading allies in the immediate hinterland — the Nabāhinah (sing. Nabhānī) of Qurayyāt, who were active in horse rearing — could have initiated such transactions (Bhacker & Bhacker 2004: 38–43 and nn. 42 & 43).[11] The eventual ejection of the Portuguese from the Omani and East African littoral in AD 1650 and the gradual occupation of that vacuum by the ambitious Omani traders of the Yaᶜāribah period will have resulted in a greater influx of this material from East Africa through the Sharqiyyah ports.

That the Omani traders of the Sharqiyyah engaged in this activity and took great interest in the elevated aesthetic value — and perhaps spiritual perception — of the qualities of Chinese porcelain, is attested by the vaulted ceiling of at least one Ibrāʾ dwelling profusely encrusted with such imports (Costa 2001: fig. 30). Of particular interest, here, is the role of Chinese porcelain inserts within the decoration schemes of Omani mihrabs and determining whether these were part of the original design or were later additions coinciding with periods of subsequent affluence. Through the donation of precious bowls to a mosque a wealthy *shaykhly* benefactor will have been able to make his mark on the local community. For the purpose of this paper we will concentrate specifically on two sites in Oman, those of Manaḥ and Sināw.

Manaḥ

The earliest of the sixteenth-century decorated mihrabs is at Masjid al-ᶜAlī in Manaḥ; it was created by ᶜAbdallah b. Qāsim b. Muḥammad al-Ḥumaymī, a resident of Manaḥ, who used a cylindrical mould to produce a prefabricated decorative scheme of impressed repetitive gypsum panels. Work was completed on the 13th day of the month of Rajab in 909/1503–1504. In addition to the shahada (*shahādah*), which appears at the top, two lines of interlocking inscriptions record the *shaykhly* patron of the mihrab — ᶜAbdallah b. Wahb (b. Aḥmad) — and the date of completion. Other lines also record the mosque's erection in 876/1471 under patrons including ᶜAbdallāh b. Wahb's father (Baldissera in Costa 2001: 247; Baldissera 1994: 81–82). The scheme of decoration is consistent with

[11] In spite of the obvious damage at the hand of the Portuguese, Qalhāt continued as an active port, receiving the Portuguese vessel, Santa Maria do Monte, in May 1520 (al-Salimi & Staples, this volume). Additionally, Qurayyāt was possibly inaccessible to large cargo vessels, as much of the horse trade appears to have taken place through Qalhāt (Bhacker & Bhacker 2004).

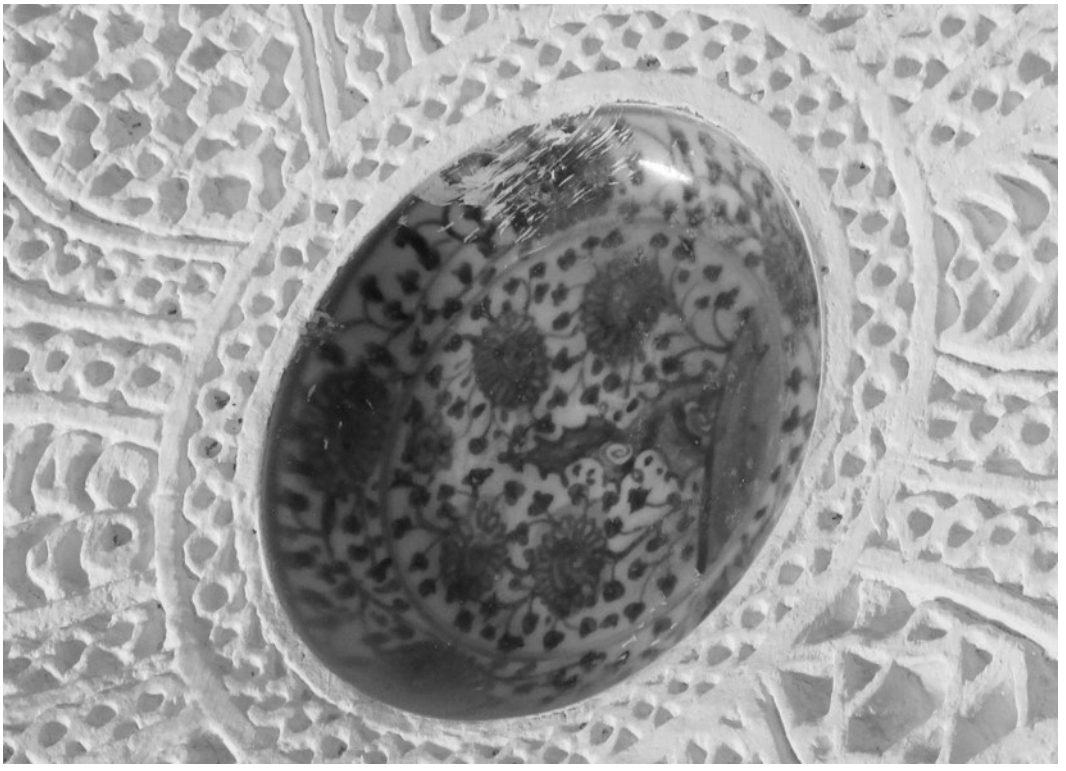

Figure 7. *A porcelain bowl insert in the mihrab at Masjid al-ᶜAlī, Manaḥ.*

al-Ḥumaymī's later Manḥī commissions at al-ᶜAyn and al-Shārah mosques. The central arched motif contains an inscribed eight-petal decorative formation with a single blue and white Chinese porcelain dish with a flowering chrysanthemum plant at its centre (Fig. 7). This may be roughly dated to the late Ming period (*c.* AD 1550–1600), therefore making a later insertion — although unrecorded — plausible.

The exquisitely decorated mihrab at Masjid al-ᶜAyn (Fig. 8) — the second earliest — created in the month of Muḥarram 911/June–July 1505, is today painted green, except for the shahada and other inscriptions, highlighted in white and a lighter shade of green. A single Chinese porcelain bowl depicting a phoenix in flight is recessed into the centre of the arched motif with the interstitial space completed with eight petal-shaped or lobular decorations (Fig. 9). Sandwiched between the outer band and the central rectangular decoration, two interlocking lines of writing record once again the patronage of ᶜAbdullah b. Wahb b. Aḥmad and the dated completion of the mihrab by al-Ḥumaymī (Baldissera in Costa 2001: 246–247; Baldissera 1994: 70).

The dish could, again, plausibly date from the Ming Wanli period (*c.*1580–1620), making it substantially later than the mihrab itself. The striking stylistic similarity with plates found among the cargo of the Lena Shoal junk, believed to have set out from the port of Guangzhou in the early 1490s — the wreck of which was found off the Philippine island of Palawan in 1996 (excavated in 1998) — would, however, suggest an earlier date of manufacture and therefore, perhaps import and ultimate use. The published chrysanthemum dish is virtually identical in design to the one at al-ᶜAlī (D: 19.2 cm; H: 4.6 cm; Goddio et al. 2002: 166, n. 183), while the difference between the 'phoenix in flight' depictions is one of viewpoint (D: 24.9 cm; H: 4.5 cm; Goddio et al. 2002: 131, n. 71). In all likelihood the plates were manufactured at the same workshop in Jingdezhen in the late-1480s/early-1490s but perhaps executed by different craftsmen, at least in the case of the latter.

The mihrab at Masjid al-Shārah, completed in 922/1516–1517, is again painted green with white inscriptions and in addition to al-Ḥumaymī's name, also records four benefactors, possibly conflating those

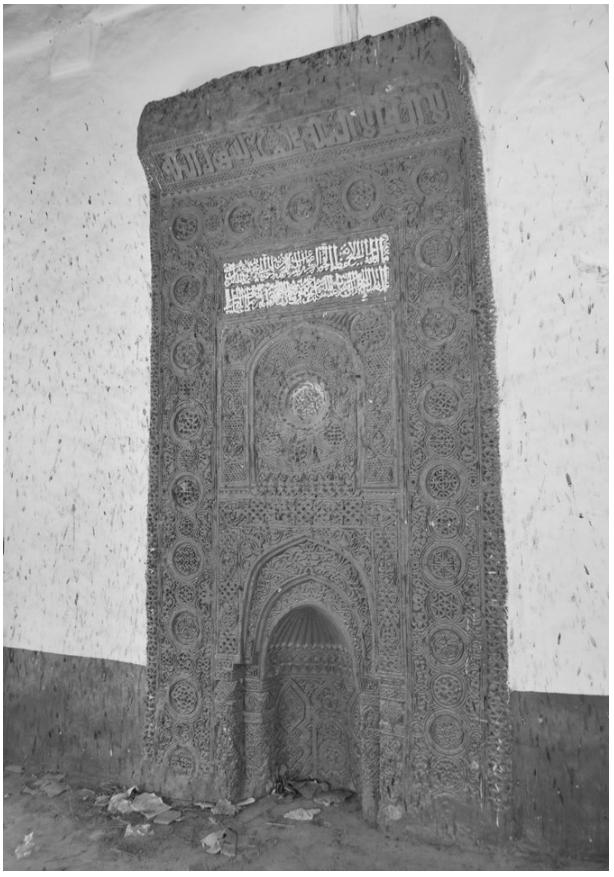

Figure 8. *The mihrab at Masjid al-ᶜAyn, Ḥārat al-Bilād, Manaḥ.*

who supported the mosque construction and the mihrab installation (Costa & Baldissera 2001: 247; Baldissera 1994: 78). Significantly, five porcelain insets were present, indicating an increase — four bowls at the outer corners and a dish at the centre of the arched motif, three of which have been lost through damage or removal. Because of the damage and obscurity caused by the painting it is difficult to make a stylistic comparison.

Sināw

In the oasis of Sināw in the Sharqiyyah region, two important settlements were studied as part of a heritage management project for the Ministry of Heritage and Culture. Both settlements, Ḥārat al-Bū Rashīd and Ḥārat al-Ṣawāwifah, contain mosques with Chinese bowl inclusions in the mihrabs, although the design schemes are entirely different.

The mihrab in Masjid al-Jāmiᶜ of Ḥārat Āl Bū Rashīd (Fig. 10), known until the mid-/late-1600s as Ḥārat al-Ḥawashim, was installed in 1068/1658 by the artisan ᶜAlī b. Ṭālib, and dedicated by Shaykh Ṣāliḥ b. ᶜAlī al-Hāshimī, during the reign of the Yaᶜāribah imam, Sultan b. Sayf (1059–1079/1649–1668) (Baldissera in Costa & 2001: 252–253). Significantly, the Portuguese ousting from Omani shores took place during his reign. Unfortunately the mosque was completely rebuilt in recent years and the restoration of the mihrab has seen the removal of the bowls to a currently unclear location. At Āl Bū Rashīd the mihrab was, as usual, decorated with rosettes placed

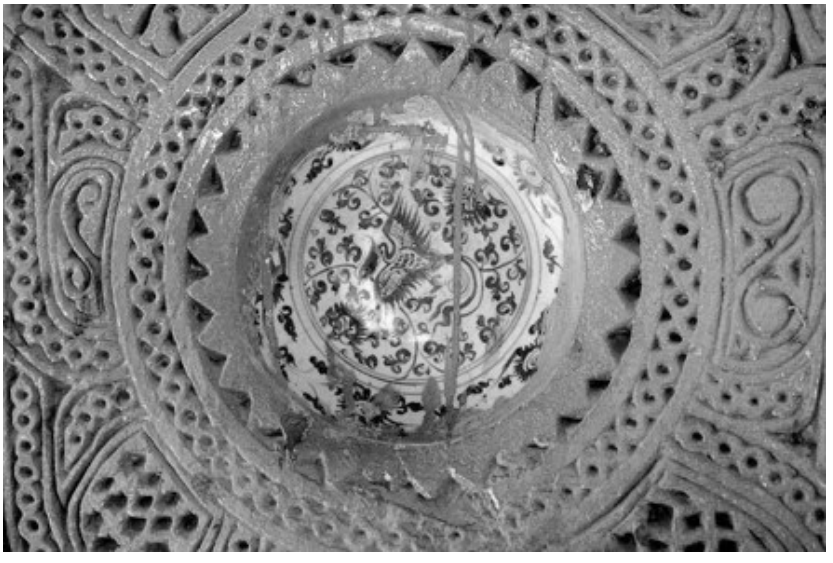

Figure 9. *A porcelain bowl insert in the mihrab at Masjid al-ᶜAyn, Manaḥ.*

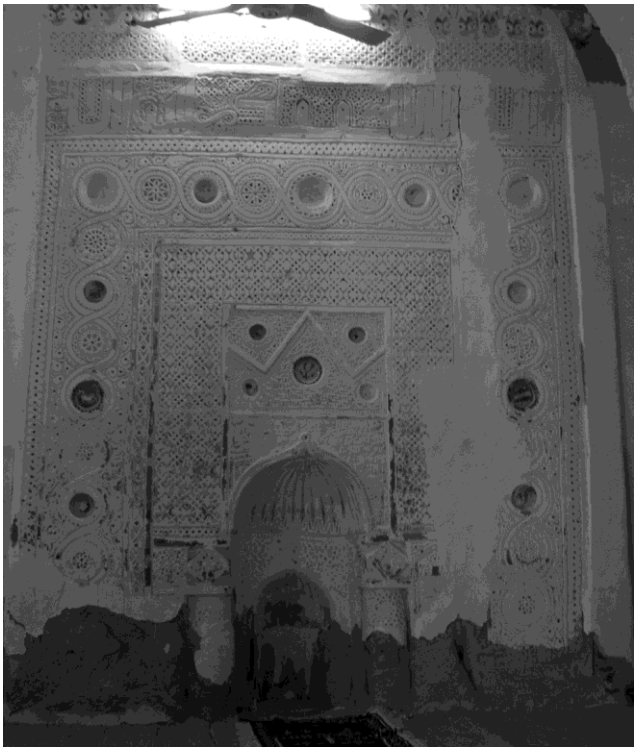

Figure 10. *The mihrab at Masjid al-Jāmiᶜ, Ḥārat Āl Bū-Rashīd, Sināw, before restoration.*

Figure 11. *The mihrab in the mosque at Ḥārat al-Ṣawāwifah, Sināw.*

into intertwining loops or knots. Alternate rosettes were encrusted with porcelain bowls. The central region above the niche proper was also decorated with five bowls, the number of porcelain insertions thus totalling sixteen.

The mihrab at Ḥārat al-Ṣawāwifah mosque (Fig. 11) is probably datable to a similar age to that of Āl Bū Rashīd and, although it is located only about 100 m from the previous settlement, its design scheme is distinctive from that of its neighbour, reflecting the restraint and sobriety more readily associated with Omani ritual architecture (e.g. the ᶜAmr b. al-ᶜĀṣ mosque in Bahlā). This example is particularly interesting because it demonstrates that the insertion of ceramics (fifteen in this case) into the mihrab is not necessarily a phenomenon that related solely to the decorated mihrab. The bowls clearly functioned independently of a larger decorative scheme. Significant in the seventeenth-century mihrabs in Sināw, however, is the marked increase in the number of deployed insets, well supported by the large number of sherds of this period found at both sites.

Discussion

The comparative lack of large congregational mosques in medieval Oman is attributable, to some extent, to the Ibadi interpretation that Friday prayer should only be held in major cities 'where justice prevails' (Hoffman 2007: 205), which was not considered a possibility due to the lack of a 'just Imam'. This had the collateral effect of leading to greater investments in smaller, settlement-specific mosques, rather than the large representative buildings known from elsewhere in the Islamic world.

In this sense, the artists' perception of these foreign pieces and how they interpreted their iconographic themes becomes a pertinent area of enquiry. From the general disposition of the bowls within the iconographic scheme, it would appear that large dishes of more elaborate design or sophisticated origin and decor were usually placed in more central and prominent locations on the mihrab. It is worth noting, therefore, that the Omani artisan had a number of choices when it came to

Figure 12. *Detail of a porcelain bowl insert in the mosque at Ḥārat al-Ṣawāwifah, Sināw.*

the decoration of their mihrabs. While Chinese blue and white had long been prized for its lustre, Persian pottery and Syrian examples — even Ottoman — could also have been used as decorative elements, and yet there appears to have been a specific choice to rely on Chinese ceramics. It may be argued that these objects had acquired a higher value than their Middle Eastern counterparts through long-established trade heritage, which made them ideal as objects worthy of donation to a particular mosque.

In the case of the Ṣawāwifah mihrab, despite the large number of bowls (originally fifteen), the one placed immediately above the niche is the most elaborately decorated with a Chinese riverine landscape and bridges. Perhaps surprising is the orientation of the dish, rotated counter-clockwise by 90°, completely disrupting the narrative of the depicted landscape (Fig. 12). Something similar can also be observed at the two mosques in Manaḥ; at al-ᶜAyn the dish displaying a phoenix is rotated sideways, as is the flowering chrysanthemum rotated off axis at al-ᶜAlī.

A number of conclusions can be drawn from this intentional interruption of the natural order, but the most likely is to be found in the Islamic prohibition of depicting the natural world. Simply rotating the image may have been sufficient to rob the depicted scene of any bearing on naturalistic reality. It may be suggested, then, that the Chinese blue and white bowls had a value that was inherent in their materiality rather than in their decorative schema, easily leading to the shallow conclusion that their positioning at the centre of the mihrab, a location of great venerability, was accorded to them less by their beauty than by their monetary importance, acting as repositories of wealth and underlining the donor's importance in the community. Perhaps, however, this view of Omani mihrab decoration is overly simplistic, and one may instead find a hidden love for the natural beauty of the organic within these iconographies — a desire to represent the natural world which required an element of encryption and the creation of which could only be achieved by an outside (non-Islamic) agent such as the Chinese potter working in complete anonymity on the far side of the world. In this light the object becomes the bearer of a hidden yearning to depict nature despite the prohibition to do so. It is a kind of nostalgia that seeks to transcend the

Figure 13. *The mihrab in a disused mosque at Ḥārat al-Ḥiṣn, Sināw showing the covering over of the original bowl inserts.*

usual sobriety of traditional Ibadi decorative schemes and moves to imbue it with a naturalistic subtext hidden in these porcelain constellations.

The fact that these decorations are found primarily in religious buildings — and even then, only on the most sacred part of the site — suggests that the use of these objects transcends the merely decorative. While aesthetic appeal was clearly part of the consideration, the glazed brilliance of the shiny porcelain placed within the otherwise matt white of the stucco frame gave these objects an ethereal quality reminiscent of stars (Bandyopadhyay 2011: 245–270). Light and brightness are traditionally associated with divinity in many monotheistic religions and it is no different in Islam:

> Allah is the Light of the heavens and the earth. The example of His light is like a niche within which is a lamp, the lamp is within glass, the glass as if it were a pearly [white] star lit from [the oil of] a blessed olive tree, neither of the east nor of the west, whose oil would almost glow even if untouched by fire. Light upon light. Allah guides to His light whom He wills. And Allah presents examples for the people, and Allah is Knowing of all things. (Surah 24. 35)

But it is the image of the star, illuminating the night of ignorance and guiding the traveller through the treacherous space of doubt to the ultimate truth: God.

> And it is He who placed for you the stars that you may be guided by them through the darkness, of the land and sea. We have detailed the signs for a people who know. (Surah 6. 97)

The heavy mysticism with which these objects appear to have been imbued in their time is evident also in the vandalism that many of them suffered over the centuries. Many were defaced, damaged, or indeed entirely removed; in other cases the bowls were simply plastered or painted over to blind their lustre and erase their images (Fig. 13). Nevertheless, the mystic undercurrents of Omani Ibadism remained audible through the words of a long genealogy of scholars such as Abū Nabhān Jāᶜid b. Khamīs al-Kharūṣī (1734/5–1822), his son Nāṣir b. Abī Nabhān (1778–1847), Saᶜīd b. Khalfān al-Khalīli (1811–1871), 'Nūr al-Dīn' al-Sālimī (1869–1914), and 'Abū Muslim' al-Bahlānī al-Rawwāḥī (1860–1920), who wrote on the nature of God until the early twentieth century (Hoffman 2004: 209).

Conclusion

The majority of porcelain surface finds in Oman are, according to our modest assemblage, approximately datable to the sixteenth/seventeenth century onwards, continuing well into the nineteenth century. Earlier examples are certain to have existed in the region, but in significantly smaller quantities. The inclusion of Chinese porcelains into Omani architectural schemes in Sināw, datable to the mid-seventeenth century, coincides with the significant increase in surface finds during the Yaᶜāribah period, shortly after the expulsion of the Portuguese and the expansion of Omani trade interests in East Africa. As the characteristic similarities between the porcelain from the Lena Shoal junk and the Manḥi mihrabs would suggest, however, a smaller quantity of objects were already in circulation in Oman during the late fifteenth and early sixteenth centuries — during the Hormuzi presence in Qalhāt — increasing with the later Portuguese occupation of the coastal centres. A gradual transformation of attitude in the politico-religious climate and the influx of porcelain through the expanding trade in East Africa are visible in the inclusion of these vessels, in some cases, into already existing decorated mihrabs.

The end of elaborate mihrab decorations came in the mid-nineteenth century, coinciding and perhaps related to the growing importance of the Wahhabis in peninsular Arabia, and their incursion into the Ẓāhirah region — reaching as far as the town of ᶜIbrī, and possibly extending their influence deep into the Sharqiyyah region. We observe that Ibadi mosques (e.g. Sulayf) began to acquire overt indications of such influence, that is, the projecting mihrab. Coastal settlements — such as Bandar Jiṣṣah occupied by the Wahhābi-influenced al-Qawāsim tribe of Raʾs al-Khaymah — emerged as exclaves of this reformation movement, and it is the influence of Wahhabism, which could be seen as an important force leading to a changed attitude towards mystical thoughts, that emerged during the sixteenth century with the resultant defacement and concealment of the bowl insertions.

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